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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,930	01/15/2004	David K.J. Kim	5681-73100	6343
35690	7590	06/15/2004	EXAMINER	
MEYERTONS, HOOD, KIVLIN, KOWERT & GOETZEL, P.C. P.O. BOX 398 AUSTIN, TX 78767-0398			DUONG, THO V	
			ART UNIT	PAPER NUMBER
			3743	

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/757,930

Applicant(s)

KIM, DAVID K.J.

Examiner

Tho v Duong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-15, 18-29 and 32-36 is/are rejected.
- 7) ☒ Claim(s) 5-6, 16-17 and 30-31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to because Figure 1 is too dark to see and the drawings should not be boxed. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The drawings filed 1/15/2004 are considered as informal because some of the lines and references numerals are rough and non-uniform. The descriptive words in the Figures are also not legible.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 19-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claimed subject matter of "wherein the threaded outer surface comprises a threaded sleeve, wherein the threaded sleeve includes a hollow portion for receiving the heat pipe" is not positively disclosed in the specification. Since claim 19 depends from claim 14, the

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scope of the claims includes a threaded outer surface positioned within an aperture, wherein the threaded outer surface comprises a cap and a threaded sleeve including a first cavity configured for receiving the heat pipe. This claimed subject matter is not disclosed in the specification since applicant discloses in the specification and drawings that either the threaded cap or the threaded sleeve is positioned within the aperture but not both of them.

In view of the clarity issues above, the examiner has not been able to determine whether claims 19-21 are new or inventive and will do so at a proper amendment.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,3,7-12,14,18,22 - 26,28 and 32-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Kolman et al. (US 5,949,647). Kolman discloses (figures 1-2) an electronic assembly comprising a printed circuit board (14); and a thermal control apparatus coupled to the printed circuit board (14), wherein the thermal control apparatus includes a heat spreader (24) formed of a thermal conductive material and mounted in proximity to an electronic device (12), wherein the heat spreader (24) includes at least one aperture (28) having a threaded inner surface; and a heat pipe (32), including a hollow interior partially filled with a vaporized liquid, having a threaded outer surface positioned within the aperture of the heat spreader; wherein at least a portion of the heat pipe (40) and thermal spreader (24) are in thermal contact with a

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surface of the electronic device (12). Kolman further discloses that the threaded outer surface comprising a thermal conductive cap or sleeve (34) including a first cavity configured for receiving the heat pipe (32) wherein the sleeve (34) includes a plurality of flat areas (36)

Claims 1-3,7,8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Noren (US 4,638,854). Noren discloses (figure 2) a heat transfer device comprising a heat pipe (10), the heat pipe having a hollow interior partially filled with a vaporized liquid; and a threaded outer surface covering at least a portion of the heat pipe, wherein the threaded outer surface is configured for coupling the heat pipe (10) into an aperture having a complementary threaded inner surface (40); wherein an outer surface of the heat pipe comprise the threaded outer surface (16); and wherein the threaded outer surface comprises a thermal conductive cap or sleeve (30) including a cavity for receiving the heat pipe.

Claims 1,3,4,7 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Corman et al. (US 3,769,551). Corman discloses (figures 3-7) a heat transfer device comprising a heat pipe (50) having a hollow interior partially filled with a vaporize liquid; a heat spreader (38) formed of a thermally conductive material in thermal relationship with an electronic device (10), the heat spreader including one aperture (38b) having a threaded inner surface; and a threaded outer surface covering at least a portion of the heat pipe, wherein the threaded outer surface is configured for coupling the heat pipe (50) into the aperture (38b) wherein an outer surface of the heat pipe comprises a threaded sleeve or cap (51) and wherein the cap or sleeve (51) including a first cavity for receiving the heat pipe and a second cavity (51a) which is capable of receiving an assembly tool for example a pliers or an adjustable wrench. As regarding the limitation of "mountable in proximity to one or more electronic device on a printed circuit board",

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 13 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kolman in view of Noren (US 4,638,854). Kolman substantially discloses all of applicant claimed invention as discussed above except for the limitation that the outer surface of the heat pipe comprises a threaded outer surface. Noren discloses (figures 2-3 and 5) a heat pipe (10) mounted directly onto an aperture (62) of a substrate (62) for dissipate heat from the heat source (3) wherein the outer surface of the heat pipe (10) comprises a threaded outer surface (16) for the purpose of mounting the heat pipe directly onto the substrate without using any threaded sleeve or nut so that fewer components are used to make the device. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Noren's teaching in Kolman's device for the purpose of mounting the heat pipe directly onto to substrate without using any threaded sleeve or nut so that fewer components are used to make to the device.

Claims 22 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kolman et al. in view of Colbert et al. (US 6,385,044). Kolman substantially discloses all of applicant claimed invention as discussed above except for the limitation that the heat spreader includes a plurality of apertures and a plurality of heat pipes inserted into the apertures. Colber et al.

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discloses (figures 1-2 and 5) an electronic assembly comprising a plurality of chips and a plurality of heat pipes (101) extending through a plurality of apertures of a heat spreader (105) for the purpose of cooling the plurality of chips with its own heat pipe for cooling. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Colber's teaching in Kolman's device for the purpose of cooling a plurality of chips with its own heat pipe for cooling.

Claims 11,12,14 and 15 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Corman et al. Corman discloses (figures 3-7) a thermal control apparatus comprising a heat pipe (50) having a hollow interior partially filled with a vaporize liquid; a heat spreader (38) formed of a thermally conductive material in thermal relationship with an electronic device (10), the heat spreader including one aperture (38b) having a threaded inner surface; and a threaded outer surface covering at least a portion of the heat pipe, wherein the threaded outer surface is configured for coupling the heat pipe (50) into the aperture (38b) wherein an outer surface of the heat pipe comprises a threaded sleeve or cap (51) and wherein the cap or sleeve (51) including a first cavity for receiving the heat pipe and a second cavity (51a) which is capable of receiving an assembly tool for example a pliers or an adjustable wrench. As regarding the limitation of "mountable in proximity to one or more electronic device on a printed circuit board", it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitation. *Ex parte Masham*, 2 USPQ2d 1647 (1987). Corman's thermal control apparatus is capable of being used in any electronic

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system including being mounted in proximity to an electronic system that has a printed circuit board.

Claims 11,12,14,15,18,23-26,28,29,32,33 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Corman et al. in view of Pin et al. (US 5,095,403). Corman discloses (figures 3-7) an electric switchboard comprising a heat pipe (50) having a hollow interior partially filled with a vaporize liquid; a heat spreader (38) formed of a thermally conductive material mounted in proximity to an electric circuit control device (10) such as a circuit breaker, the heat spreader including one aperture (38b) having a threaded inner surface; and a threaded outer surface covering at least a portion of the heat pipe, wherein the threaded outer surface is configured for coupling the heat pipe (50) into the aperture (38b) wherein an outer surface of the heat pipe comprises a threaded sleeve or cap (51) and wherein the cap or sleeve (51) including a first cavity for receiving the heat pipe and a second cavity (51a) which is capable of receiving an assembly tool for example a pliers or an adjustable wrench; and both the heat spreader and the heat pipe are in thermal contact with the electronic device (10). However Corman is silent about if the electric control device (10) is mounted on a printed circuit board. Pin discloses (figure 6 column 3, lines 50-54 and column 4, line 52- column 5, line 1) an electric switchboard that has one or more electrical power devices (11) such as circuit breaker and contactors wherein all the circuitry and indication and control component of the power device (11) are located on a printed circuit board (28) for the purpose of forming an electronic interface between the electrical power devices (11) and other electric devices in the switchboard. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Pin's teaching in the

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Corman's system for the purpose of forming an electronic interface between the electrical power devices and other electric devices in the switchboard.

Allowable Subject Matter

Claims 5-6, 16-17 and 30-31 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The Allen wrench is known to have a hexagon shape (as also disclosed in the drawings). The prior art's second cavity is not capable of receiving the Allen wrench.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Colbert et al. (US 6,385,044) discloses a heat pipe heat sink assembly for cooling semiconductor chips.

Shutt (US 4,131,785) discloses an electrically heat liquid tank employing heat pipe heat transfer means.

Calkins et al. (US 4,688,537) discloses an apparatus for preventing freeze-up of a pressure regulator valve in a liquefied petroleum fuel system.

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WO 00/14469 discloses a heat exchanger, cabinet for telecommunication devices and method of cooling electronic devices.

Devellian et al. (US 4,389,002) discloses an injection molding nozzle.

Cleaveland (US 4,005,297) discloses a vacuum type circuit interrupters having heat dissipating devices.

Jackson (US 6,179,841) discloses a set screw having a cavity for receiving an assembly tool.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Tho Duong whose telephone number is (703) 305-0768. The examiner can normally be reached on from 9:30-6 PM.

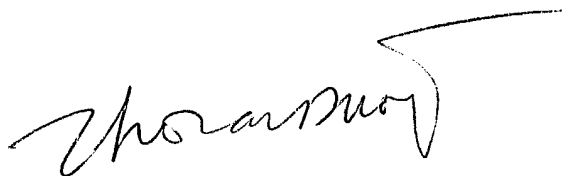
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennet, can be reached on (703) 308-0101. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0861.

TD

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May 30, 2004



Tho Duong

Patent Examiner.